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correct?
A Right.
Q Okay. If, hypothetically, the person in Libby developed an asbestos-related disease from that exposure; okay --
A Uh-huh.
Q -- any of them; meso, lung cancer, asbestosis, pleural disease.
A Right.
Q As an epidemiologist -- strike that.
If the person in Libby that was loading the concentrate onto the rail car developed an asbestos-related disease from the handling of the vermiculite concentrate onto the rail car, and the individual in Boston developed an asbestos-related disease from his handling of the taking off of the vermiculite concentrate from the rail car in Boston, from an epidemiological standpoint, would there be any reason to believe that the asbestos-related disease that was contracted by the two gentlemen would be a different disease? I maybe asked -- let's say it was mesothelioma. If the gentleman in Libby contracted mesothelioma from that exposure to concentrate and the gentleman in Boston contracted mesothelioma from his exposure to that concentrate that ended up in Boston,

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would you expect the mesothelioma to be different mesothelioma?
A Normally, no, but the environmental exposures would be different. Because the guy loading the stuff onto the train in Libby would, undoubtedly, have more exposures than just the loading of. Because he's living in this town where this stuff's all over and there's clouds of dust and all this.
Q Right.
A The guy in Boston, in theory, is just picking up a bag and dropping it. So maybe that could cause a different type of disease pattern, I don't know, because the exposure is stronger. Maybe you get more or faster problems in Libby.
Q So that the -- you're hypothesizing that it's possible that if -- and your premise is that it is the level of exposure; correct?
A Yeah.
Q Because we can agree that the stuff is the same stuff.
A Yeah; right, right.
Q And from a toxicologically, epidemiologically, everything we know in science, there's no reason to think that the stuff -- if you're exposed to the same stuff in Boston as you're exposed to in Libby, the

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disease that you ultimately get is going to be the same disease; correct?
A Right. The only thing, it might be -- the progression has spread. Might be -- could possibly be faster in Libby if there's a more concentrated exposure. That's a hypothetical.
Q Right; that's a hypothesis that you would agree hasn't been tested.
A Right.
Q To the extent that it's been tested with analytical epidemiology, you would look to the Amandus and McDonald study and the mortality study for -- well, actually, I -- well, I would say the Amandus and McDonald study because you have some understanding of levels of exposure in that study.
A Some. But I would look at the ATSDR stuff too.
Q Okay; the ATSDR Mortality Study?
A Yeah.
Q Okay.
To get back to the hypothetical, the point you're making is that if you're exposed -- let's say you're exposed to, you know, a hundred fibers. This would be true whether you were in Libby or somewhere else; correct?
A Uh-huh.

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Q If you were in Boston and you happened to be the person that takes the stuff off the cart every day, and you're exposed every day for forty years, you might have a different rate of how fast you might develop the disease than the guy that just worked there for two days or the guy that worked there for just a year; correct?
A Right.
Q And did the same thing; right?
A Right.
Q Okay. So the fact that you might get it faster is dependent upon the level of the exposure; correct?
A Partially it's that, and partially, you know, one of the arguments has been made is that the fiber from Libby is different and it causes a different kind of asbestosis. I'm not an expert in that area at all, but that's something that, I think, that has been talked about in some of the literature.
Q No, no, and I totally understand you're talking there about the differences between chrysotile and amphibole asbestos or tremolite asbestos or whatever you might want to call the asbestos at Libby.
A Uh-huh.
Q But I'm asking you, I think, a different question which is that I want you to assume that they're exposed to the exact -- to the Libby fibers, whatever

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conservative fashion. And it's a way of putting a brake on our own theoretical and methodological exercises.

MS. HARDING: Is it time for lunch? Break for lunch?

VIDEO TECHNICIAN: Off the record, the time is 12:25.

(Deposition in recess from 12:25 p.m. to 1:12 p.m.)

VIDEO TECHNICIAN: We're back on the record. The time is 1:12.

Q (By Ms. Harding) Dr. Molgaard, I'm sorry, a couple more questions about the CARD Mortality Study and, really, actually, Dr. Whitehouse's use of it.

A Uh-huh.

Q And I just want to make the record clear, because I think -- I think it is, but I just want to make sure.

On page -- I've written over it, and I think it must be 19 of Dr. Whitehouse's study.

MR. FINCH: Report.

MS. HARDING: Report, I'm sorry; thank you.

Q (By Ms. Harding) Exhibit -- it's the May report, Exhibit 5. Oh, I'm sorry, this is your report; I apologize. This is your report. You have some -- so this is Exhibit 2.

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So on page 19 of your report, you talk about some comparisons and line of reasoning and kinds of conclusions -- well, let me start with comparisons.

I think you've already testified, I just want to make sure that it's true with respect to the kinds of things that you say on page 19, that any comparisons that you make, based upon the data or the analysis of Dr. Whitehouse in his CARD Mortality Study, are intended to be hypothesis generating comparisons; correct?

A Right.

MR. HEBERLING: Objection; confusing and overbroad as to all the comparisons on page 19.

Q (By Ms. Harding) Okay. Well, to start with, with respect to the comparison of the CARD Mortality Study to the Markowitz and the Selikoff and Seidman study, I think you already testified that comparisons between CARD Mortality Study and those studies are for the purpose of generating hypothesis --

A Yes.

Q -- to be later tested by analytical epidemiological studies; correct?

A Yes.

Q Okay. And the same could be said with respect to the middle paragraph, here, when you talk about conclusions about the entire cohort of Libby; correct?

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A Yes.

Q Okay. So that the conclusion -- or the statement "The CARD Mortality Study could be used to draw conclusions about asbestos-related mortality in the entire cohort of Libby, by simply assuming that the entire cohort of Libby there was no additional ARD deaths which were not CARD Mortality Study deaths. This is a very conservative assumption of zero deaths in the rest of the cohort. The conclusion at Dr. Whitehouse's report that 'Libby's mesothelioma rate is certainly the highest in the United States' is a proper conclusion. It is a proper epidemiological conclusion because it rests on comparison with other available mesothelioma rates in the United States. This is how epidemiologists make judgments about excess occurrence of disease and excess occurrence of risk. It is standard of practice in epidemiology and public health." And by that I understand that you mean that it is appropriate to make that comparison and to talk about this possibility as generating a hypothesis that should now be tested with analytical epidemiology; correct?

A Right.

Q The -- we marked earlier Exhibit 1, I think, is the new data from -- or I'm not sure how new it is -- but data that you just provided from NIOSH, CDC

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National Institute Occupational Safety and Health, Work-Related Lung Diseases (WoRLD) Surveillance System Asbestosis: Mortality; is that right?

A That's right.

Q And it looks like the -- underneath Work-Related Lung Disease (WoRLD) Surveillance System, it says -- it looks like -- did it come from a website; do you know?

A Actually, Jon found it and I did not find it, so I'm not sure where it was from.

Q Okay. It looks like it says "Asbestosis and Related Exposures 2007 TO 1-10." Do you see that in kind of a --

A I actually don't have it.

Q I think it's in the very bottom.

A Is it?

Q Or maybe not. Maybe -- did we ever give you one?

A I don't think I got one.

MS. HARDING: You might have the original, Jon. Do you need a copy back?

MR. HEBERLING: No.

Q (By Ms. Harding) Do you know if this data was generated in 2007 and reported -- first reported in 2007?

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A I don't know.
Q Don't know; okay. But if you just turn to the page of the data, it's got six columns; is that right?
A I have -- yes, there are six.
Q County is the first column, State is the second column.
A Right.
Q Okay; Age-Adjusted Rate, Crude Rate, Number of Deaths, and Percent Female; is that right?
A Right.
Q Okay. What I wanted to ask you is, there is a difference between the rate of disease in a population and the number of cases of disease in a population; correct?
A Right.
Q And just -- it's also true that a particular geographical location may have the highest rate of disease, but that same geographic location may not have the highest number of cases of disease; correct?
A That's correct.
Q Okay. And, indeed, that's the case on this chart here; right? It lists Lincoln County as having the highest rate of disease --
A Right.
Q -- for asbestosis; is that right?

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A That's right.
Q Okay. And -- but in terms of the numbers of cases of asbestosis in a given county, it's not the highest; correct?
A That's correct.
Q Indeed, it's -- I can't tell exactly where. It may be somewhere in the middle?
A Yeah, that sounds fair.
Q Okay. It's got 44 cases of asbestosis listed in number of deaths; is that correct?
A That's right.
Q And the highest number of cases of disease in any county is Camden County, New Jersey; correct?
A That's right.
Q And that's 152 cases.
A That's right.
Q And then the second highest, looks like it's Mobile County, Alabama with -- oh, no, that's not right; I'm sorry. The second highest would be Jefferson County, Texas.
A Texas, yeah.
Q With 151 cases.
A Right.
Q Okay; of asbestosis. The third highest is Somerset County, New Jersey with 143 cases of

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asbestosis; is that right?
A Yeah, that's right.
Q And the fourth is Mobile County, Alabama with 137 cases of asbestosis. And then, looks like the fifth, I think, is Kitsap County, Washington with 107 cases. Do you see that?
A Uh-huh; yes.
Q Now, in this case in which you've been asked to testify on behalf of the Libby Claimants, you are not -- or haven't been asked, I don't think -- you can correct me if I'm wrong -- to testify about the number of claims that will be presented to a hypothetical trust if Grace emerges from bankruptcy; is that correct?
A I have not had that discussion with anybody.
Q Okay. And the fact that Lincoln County has the highest rate of asbestosis does not necessarily mean that Lincoln County will present to the trust, after it's formed if it's formed, the highest number of cases; correct? You don't know the answer to that; correct?
A I don't, no.
Q Okay. And it's -- well, that's fine. And you aren't going to be presenting any testimony on that issue; correct?
MR. HEBERLING: Objection; unclear as to what issue?

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Q (By Ms. Harding) Okay; on the issue of how many cases from any particular jurisdiction and eventual trust will be presented with from any particular county.
A Yeah, I wouldn't be addressing that.
Q Okay.
The next thing I wanted to ask about is there are a number of -- there's a place in Dr. Whitehouse's report where he calculates a rate of mesothelioma in Libby. Do you recall that?
A Uh-huh.
Q And there's also a place where he calculates a rate of asbestosis in Libby.
A Right.
Q Okay. Now, if you're going to calculate a rate of disease in a given geographic location, it is Epidemiology 101 that your denominator must be the population that gives rise to your numerator of cases; is that right?
A It can be done that way. I mean, it's usually done that way, but you can also crank rates the same way that Whitehouse did which is basically it's a rate within his own case series. There's nothing wrong with doing that. But it's not -- normally, you're going to work the way you suggested.
Q Okay. But just to be clear, the rates that he

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makes it into an analytic epidemiological -- designed, at least, to attempt to --
A They're attempting to bridge it into -- from descriptive to an analytical effort, yeah.
Q You had mentioned earlier that you would -- I think I asked you if you were trying to understand the rate of disease in the Libby population, this would be one of the studies you would look at; correct?
A Uh-huh, yeah.
Q Along with the work by Dr. Amandus and NIOSH and their studies in the '80s, Dr. Sullivan's follow-up of that work, and the McDonald studies, both in the '80s and the follow-up in 2004; right?
A Right.
Q Okay. The -- if you turn to page 25 of the document, table 7 -- you know, actually, before --
MR. HEBERLING: Got an extra over there? That's all right; I've got one.
Q (By Ms. Harding) You had a criticism of Dr. Moolgavkar. I think Dr. Moolgavkar had a criticism of the study, and you had a criticism of his criticism. And it related to whether the additional lung cancers that they added to the observed cases in this study was appropriate or not; correct?
A Uh-huh.

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Q Okay. And Dr. Moolgavkar thought that it was not appropriate, and you thought that it was okay to do it; correct?
A Yeah.
Q Leaving that aside, just looking at table 7, for Combined Respiratory Mortality in Lincoln County --
A Right.
Q -- Using the Montana and US Population References, 1979 to 1998 --
A Uh-huh.
Q -- would you agree that this provides the rate of disease in Lincoln County during -- for these diseases, during the period of time described, 1979 to 1998?
A Yeah, I would assume that's true.
Q Okay. And as far as you know -- well, let me ask the next question. In table 8, would you agree that it is the rate of disease for the diseases listed in table 8 in Lincoln County, from 1979 to 1998, excluding cases that had worked formerly for W.R. Grace at the mine?
A That appears to be what it is, yeah.
Q Okay. And to your -- in your opinion, are you aware of any other analytic epidemiological study that's been published that provides this kind of information

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for these diseases in the published literature?
A For Libby or just in general?
Q I'm sorry; for Libby, for Lincoln County.
A No, I think this is, by and large, the one that has it like this.
Q Okay. And so is it fair to say that this is the best analytic epidemiological evidence on the rates of disease in Lincoln County for the period 1979 to 1988 -- 1998?
A I would say it's certainly one of the stronger ones; okay? I don't know if it's the best, but it's certainly one of the better ones.
Q Okay. What -- if there are -- there aren't any -- would you agree with me that there aren't -- well, there certainly are rates of disease in the workers that are published in other places --
A Right.
Q -- that are analytic epidemiology.
A Right.
Q Okay. Are there any other published analytic epidemiologic studies designed to be able to test causal hypotheses about disease rates in Lincoln County that you're aware of?
A Um --
Q Not just of workers.

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A But in general, in the general population?
Q In the general population in Lincoln County.
MR. HEBERLING: Objection; unclear as to time.
MS. HARDING: I think I said from 1979 to 1998.
THE WITNESS: I think -- this is the one I guess I know of.
Q (By Ms. Harding) Okay. Are there any others that I should look to or be aware of? I'm just not aware of any others. I just want to make sure we're not missing something.
A I think not.
Q Would you agree that in table 8, when the ATSDR authors exclude the workers from the Libby mine from the analysis, that the statistical -- that the statistical significance of the relationships reported disappears in all categories in table 8?
A Disappears, but it's very close in a couple of places. But it is not apparent in table 8.
Q Okay.
Dr. Molgaard, I was going to ask you a bunch of questions about Dr. Whitehouse's impression study, but because my colleague here needs to go ask questions next, I do just want to confirm that the Whitehouse

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progression study, which we marked as Exhibit 7, is a descriptive study that's not designed to test hypotheses; right? We already talked about that.

A Right.

Q Okay. And you and the experts that prepared reports for Grace had some disagreements about some of the techniques that were used by Dr. Whitehouse in that paper; correct?

A Yeah.

Q Okay. But the -- the -- you don't disagree with the Grace -- any of the Grace experts that have reviewed the study that it is not an analytic study intended to test causal hypotheses. It's not designed to do that; correct?

A It's a descriptive study, yes, with what -- descriptive epidemiology as defined by Last in spite of me.

Q The only other -- you had mentioned that -- actually, it doesn't matter.

And then the same -- I just have the same question with respect to the Peipins study which is Exhibit 8. Again, there was some disagreement amongst you and some of the Grace experts about -- I can't remember, but some points about Peipins. But you agree that it is a descriptive study not designed to test

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causal hypotheses; correct?

A To me, it's a classic example of a population-based descriptive epidemiology study.

Q Okay. And the associations that are reported -- well, it's kind of interesting. The associations that are reported in the study are exactly what you were talking about at the beginning of the day. They are designed to, if you find an association there, to say Okay, let's go -- let's go find out what's really going on and do a proper epidemiological study and test whether the association is causal; correct?

A Not so much a proper epidemiological study as one that's more sophisticated.

Q Yes; an analytic study designed to test the hypothesis that the association is actually causal as opposed to just there by chance.

A Right.

Q Okay. In epidemiological studies where the -- in descriptive studies, like the ones we've been talking about today where they look for associations, where they don't find associations in the study, I guess that is something that if you don't find an association, you typically don't follow up and try to test whether it's causal or not because it's not there. Is that -- I'm just trying to -- is that fair?

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A Yeah, it's fair.

MS. HARDING: Nate, I'm sorry for taking so long.

MR. FINCH: Why don't we take a five-minute break.

VIDEO TECHNICIAN: Off the record, the time is 2:01.

(Deposition in recess from 2:01 p.m. to 2:05 p.m.)

VIDEO TECHNICIAN: We're on the record. The time is 2:05.

EXAMINATION

BY MR. FINCH:

Q Dr. Molgaard, my name is Nathan Finch. I represent the Official Committee of Asbestos Personal Injury Claimants in the Grace bankruptcy.

Would you agree with me that a descriptive epidemiological study does not test any kind of a hypothesis, not just causal hypotheses?

A No, I don't think I would agree with that.

Q Well, what do you mean by "causal hypotheses"?

A I mean, if you have a specific agent that you think is causing a specific disease, okay, but you can use descriptive studies to test other things, like are the rates for breast cancer in Iowa higher than they are

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elsewhere in the United States? It's a research question. It is a hypothesis, but it's not an etiological hypothesis, per se.

Q It's not -- it's not an analytical epidemiological study that would allow you to say that exposure to a particular type of asbestos is more likely to cause an asbestos-related disease than exposure to a different type of asbestos; right?

A Right. And part of the distinction is that when you get into the analytical types of studies, usually there will be some explication of biological process or plausibility; okay? So exposure to this kind of an agent causes these sorts of things to happen biologically and results in this kind of a disease. Descriptive studies don't usually do that.

Q You are not a medical doctor; correct?

A Correct.

Q You're not an expert on pulmonology?

A No.

Q You're not board certified in either internal or occupational medicine?

A Correct.

Q You have, I counted, 150-some-odd publications listed on your CV.

A Correct.

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Q Is that correct?
A Yeah.
Q Not a single one of them relates to asbestos-related disease?
A Actually, there are -- there is one that relates to asbestos-related disease, but it may not be on that copy of the CV that you've got.
Q Okay. Have you ever published an article on the epidemiology of asbestos-related disease in a peer review refereed journal?
A Yes.
Q What was the title of the article and what was it about?
A After 150, it gets hard to remember titles exactly. But it's like it was a comparison of the experience in Minamata Bay, Japan where they had a very bad outbreak of mercury poisoning with the experience in Libby, Montana, in terms of the asbestos problems; okay? And basically what I was doing -- it was a journal that -- it was a sustainability journal. It's an environmental health kind of journal. And basically what I was doing there was just trying to say Here you have this pattern in this population. How did the community respond to it in Japan? How did the community respond to it in Libby? Are there any parallels? And

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that was the thrust of the paper.
Q Okay; but it wasn't an analytic study where you're trying to assess causation of asbestos-related disease; correct?
A No, no.
Q You weren't trying to compare the rate of asbestos disease seen in a Libby cohort compared to the rate of asbestos disease existing anywhere else; correct?
A No. I was really looking at a community response to environmental perturbations.
Q Okay.
Are you familiar with the Environmental Protection Agency Science Advisory Board process?
A Just in general.
Q What is your general understanding of that?
A That it exists and there is a process. That's about it.
Q I believe you testified that you read Dr. Frank's deposition in preparation for your deposition today.
A Yeah.
Q Did you recall the discussion with him about the EPA Science Advisory Board process last summer where the question that they were asked to analyze was whether

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there was differences in potency between different types of asbestos?
A I don't remember that discussion. But if you say it was in there, it's in there, I'm sure.
Q You certainly haven't reviewed all of the analytical epidemiology literature that exists out there in the world about asbestos disease; correct?
A Right.
Q As part of your work in this case, you have not attempted to analyze whether amphibole asbestos is more likely to cause mesothelioma than chrysotile asbestos; correct?
A Correct.
Q The -- would you agree with me that nothing that Dr. Whitehouse has done can stand up, as a matter of analytic epidemiology, or support the hypothesis that Libby asbestos is more likely to cause mesothelioma than chrysotile asbestos?
MR. HEBERLING: Objection; compound.
THE WITNESS: In the sense that his studies are descriptive, they are not making -- they're not supporting one or another etiological position.
Q (By Mr. Finch) In order to know whether Libby amphibole asbestos is more likely to cause mesothelioma than chrysotile asbestos on a fiber-for-fiber basis,

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you'd have to have accurate exposure data for the cohorts; correct?
A You could -- there are a couple of ways you could do it. One would be that way. The other way would be to look at -- to do basically what NIOSH did recently where they were looking at that document 1 I think we looked at, where they were really making -- setting up a situation where you could do ecological comparisons between different counties in the United States. And the assumption there is that the counties that have high rates, not numbers but rates, are the ones that have some issues around asbestos, et cetera.
Q But this Exhibit 1, this CDC NIOSH data, is descriptive epidemiology. It doesn't analyze whether or not -- it doesn't say anything at all about fiber type; correct?
A Correct.
Q And it doesn't analyze whether or not exposure to amphibole asbestos is more likely to cause mesothelioma than exposure to chrysotile asbestos; correct?
A Correct.
Q There's no data at all in here about whether people in Camden County or Sagadahoc County, Maine are

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exposed to chrysotile asbestos, amphibole asbestos or Libby asbestos; right?
A Yeah. And the assumption would be that you would have some extra information that you would know that, for example, in Libby that there is this kind of a fiber and elsewhere there's some other kind of a fiber. And then you could say Well, in general, ecologically, we can make this comparison. Ecological studies are not considered a tremendously strong research design, but you could make a comparison like that.
It would be difficult -- I would not argue that it was especially analytic to do that, but you could look at a table like that and make some hypotheses.
Q You could make some hypotheses, but you certainly couldn't prove that hypothesis to a table like what's in Exhibit 1; correct?
A Correct.
Q You would not testify, to a reasonable degree of certainty as an epidemiologist, that exposure to Libby asbestos is more likely to cause mesothelioma than exposure to chrysotile asbestos.
A Probably would not.
Q You haven't done the work to make that assessment; correct?
A That's correct.

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Q And to the extent that the EPA Science Advisory Board, last summer, looked at every piece of analytic epidemiology that existed in the world on exposure to different asbestos fiber types and concluded that it was impossible to quantify the difference between amphibole asbestos and chrysotile asbestos in causing mesothelioma or lung cancer, you would not be in a position to say that they were wrong.
A No, I would not.
Q Have you ever heard of Les Stayner?
A No.
Q Ever heard of Julian Peto?
A Yeah.
Q I take it you weren't involved in the Science Advisory Board project at all.
A No.
MR. FINCH: Okay. Why don't we mark these as the next two exhibits.
(Deposition Exhibit Nos. 17 and 18 marked for identification.)
Q (By Mr. Finch) Handing you what's been marked as Exhibit 17 and Exhibit 18, and ask you some questions, first, about Number 18 and then we'll move back to Number 17.
A Just in terms of housekeeping, I don't seem to

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have an Exhibit 15 in this stack.
MS. HARDING: Did I take it back? I'll find it.
THE WITNESS: Okay.
MR. HEBERLING: What's the number on the new one?
MR. FINCH: 17 and 18.
THE WITNESS: 17 and 18.
MR. HEBERLING: I have one exhibit here. I have the EPA November 14th.
MR. FINCH: Yep, here it is; 17.
Q (By Mr. Finch) Exhibit 18 is the report from the Science Advisory Board to the EPA. Do you see that, sir?
A Yes, sir.
Q And if you look to the third page of the document that begins Enclosure 1, that lists the members of the Science Advisory Board Asbestos Committee.
A Okay.
Q Do you see that?
A Yep.
Q And you see that you have toxicologists -- a toxicologist on that list?
A Uh-huh.
Q You have a couple of epidemiologists on that

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list?
A Uh-huh.
Q When say "uh-huh" you mean yes?
A I'm sorry; yes, I mean yes.
Q You have medical doctors on that list?
A Yes, you do.
Q You have statistics professors on that list?
A Yes.
Q You have industrial hygienists on that list?
A Yes.
Q You have someone who is a professor of soils who is an expert in mineralogy on that list?
A Right.
Q In short, you have a group of people that, if you wanted to test the hypothesis of whether or not amphibole asbestos is more likely to cause mesothelioma or lung cancer than is -- or other type of asbestos fibers, would have the background to make that assessment; correct?
A They have the background to make an assessment.
Q Yes. And neither you nor Dr. Whitehouse has done the type of analytical work that would be necessary to make the epidemiological determination that exposure to Libby asbestos is more likely to cause mesothelioma than exposure to chrysotile asbestos.

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A I could make an assessment that was epidemiologic in nature.
Q But you haven't done it; correct?
A I have not done it.
Q Neither has Dr. Whitehouse; correct?
A Not to my knowledge.
Q Okay. And you have not made an assessment as to whether or not exposure to Libby asbestos is more likely to cause lung cancer than exposure to chrysotile or any other type of asbestos.
A Correct.
Q And you can't say, as a matter of expert epidemiological opinion, that exposure to Libby asbestos is more likely to cause any asbestos-related disease than exposure to chrysotile asbestos; correct?
A I have not said that.
Q You have not said that, and Dr. Whitehouse has not said that.
A Correct.
Q And based on the work you have seen thus far in the case, no one has done the analysis to be able to say, as a matter of epidemiology, that exposure to Libby asbestos is more likely to produce asbestos-related disease in humans than exposure to other types of asbestos.

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A I don't believe that exists.
Q You mean you don't believe that -- nobody has done the work to say that; correct?
A Right; yeah.
Q Now, Exhibit 17 is -- this is a document that you signed; correct?
A Yes.
Q This is an expert report that you prepared in connection with evaluating whether consumption of products containing ephedra is a cause of stroke?
A Yes.
Q What's ephedra?
A It's a dietary supplement.
Q Okay.
A An ingredient in a dietary supplement.
Q Okay.
You -- in one of your responses to Mrs. Harding's questions, you described the CARD Mortality Study as a case series?
A Yes.
Q Is that correct?
A Yeah.
Q You believe the CARD Mortality Study is a case series?
A I do believe that.

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Q Is the -- Dr. Whitehouse's paper on mesothelioma in Libby, the 2008 paper, that's also a case series?
A Yes.
Q The 2004 paper on progression of asbestos disease, that's also a case series?
A Yes.
Q None of them are -- well, let me back up.
On page three of this expert report that you signed in 2003 --
A Uh-huh.
Q -- paragraph 15, you refer to something called a controlled epidemiological study.
A Uh-huh.
Q Do you see that?
A Yes.
Q What is a controlled epidemiological study?
A That would be one where you either have a formal control group or you have a comparison population of some kind where you are trying to look at the background rate of occurrence and compare it to the rate of disease in the population. So you have a bunch of people who have used ephedra, for example. What's the rate of disease in that group compared to the normal naturally-occurring rate of occurrence of the disease.

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And then you can do the -- observe the expected thing if you're just doing comparison of populations or you can have a formal -- formal controlled group.
Q Okay. Would you agree with me that the work that Dr. Whitehouse has done in connection with this case, none of it is a controlled epidemiological study?
A Correct.
Q Okay. In paragraph 16, second sentence, you write "A proper study design must precisely define the hypothesis to be tested and the background rate of disease at issue." Do you see that?
A Yep.
Q Do you agree with that?
A Uh-huh.
Q Is that a "yes"?
A That is a yes.
Q All right; on the next page, there is a table Levels of Evidence and Grading of Recommendations. Oh, sorry, Levels of Evidence and Grading of Recommendations. Do you see that?
A Yes.
Q The lowest level of data is data from anecdotal case series.
A Right.
Q And would you agree with me that data from a

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case series cannot be used to prove hypotheses about risk of disease in a population?
A That's what John Last says. And I've agreed with that multiple times today. However, the American Heart Association table here actually is a stronger statement about the use of case series than the Last thing. I mean, they actually include it as --
Q They include it as --
A -- at the very bottom of the barrel.
THE COURT REPORTER: Whoa; I'm sorry.
MR. FINCH: Sorry.
THE WITNESS: I think they include it as the weakest kind of evidence which is actually stronger than what Last says, which I've agreed to 14 times today. So --
Q Right.
A So --
Q So you basically followed the Last, L-a-s-t, this guy's book --
A Yeah.
Q -- that you can't make statements about the risk of disease in a population based on a case series; correct?
A That's -- that's right.
Q That's your view as an expert in the field of

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epidemiology.
A That's my view.
Q Now, paragraph 27 of the same document. You there Dr. Molgaard?
A Uh-huh.
Q Is that a "yes"?
A Yes.
Q I don't mean to keep pestering you, but it makes it easier on the record.
A That's all right; I understand.
Q You write "Similarly, while anecdotal" evidence -- "adverse events reports and/or case reports may give rise to a hypothesis that must be tested, they cannot be used to quantify any possible risk or to determine who in a population may be at risk." I take it you agree with that?
A Yes.
Q So a case series cannot be used to quantify the risk of disease; is that correct?
A Well, I think what I was trying to talk about here was a single case report, not a case series; okay? A single case report, often you'll see in the medical literature someone will have a case they found that has some obscure happening in it, and they'll write it up as a case study and claim that there's probably etiological

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significance to whatever happened; okay? Those I do not have faith in.
But a case series which is a bunch of them strung together through somebody's clinic, there is something you can learn from those, I believe, because it's more than one simple case.
Q It's more than one simple case, but it is -- again, a case series is something that you use to create a hypothesis, but it doesn't test the hypothesis or confirm the hypothesis; correct?
A Correct.
Q So if the hypothesis is that exposure to Libby asbestos is -- strike that.
If the hypothesis is that if you have asbestos -- pleural disease caused by exposure to Libby asbestos --
A Uh-huh.
Q -- that you have a quantifiable risk of dying from that disease, a case series cannot be used to make a -- to prove that hypothesis.
A Right; correct.
Q Okay. So, for example, let's talk about the definition of hypotheses and whether or not Dr. Whitehouse's work or your work has either tested a particular hypothesis or proven a particular hypothesis.

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Can we do that?
A Sure.
Q Okay. Would you agree with me that a hypothesis is an assertion or a thought that may or may not turn out to be true?
A Yeah, I can agree with that.
Q Okay.
One hypothesis we talked about here today is that Libby asbestos is more likely to cause mesothelioma than chrysotile asbestos. That's a hypothesis.
A Right.
Q And so far, neither you nor Dr. Whitehouse has done the work to establish whether or not that assertion is true.
A Correct.
Q Okay.
Another hypothesis that -- or assertion that one could have is that mesothelioma caused by exposure to Libby asbestos is more likely to lead to death than mesothelioma caused by exposure to some other type of asbestos.
A Yes.
Q That's a hypothesis.
A Yes.
Q And I don't think anybody has even asserted

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that. But whether they've asserted it or not, neither you nor Dr. Whitehouse has done the work to prove the truth of that hypothesis; correct?
A Correct.
Q Okay.
Another hypothesis you could have is that lung cancer caused by exposure to Libby asbestos is more likely to lead to death than lung cancer caused by exposure to some other type of asbestos; correct?
A Correct.
Q And neither you nor Dr. Whitehouse has done the work to prove the hypothesis that lung cancer caused by exposure to Libby asbestos is more likely to lead to death than lung cancer caused by other forms of asbestos.
A Correct.
Q Okay.
Another hypothesis you could have is that asbestosis caused by exposure to Libby asbestos is -- strike that; let me back up.
Another hypothesis that one could have is that Libby asbestos is more likely to cause asbestosis than exposure to a similar amount of chrysotile asbestos. That's a hypothesis one could have; correct?
A Correct.

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Q And neither you nor Dr. Whitehouse, or any other expert in this case, has done the work to prove that that hypothesis is true; correct?
A Correct.
Q Okay.
Another -- another hypothesis that one could have is that asbestosis that is caused by exposure to Libby asbestos is more likely to lead to death than asbestosis caused by exposure to some other type of asbestos.
A Correct.
Q And neither you nor Dr. Whitehouse have done the epidemiological or analytical work in order to prove that hypothesis; correct?
A Correct.
Q Nor has Dr. Frank; correct? Nobody in this case that you've seen has done that work.
A I don't believe so.
Q Okay. And that would be true of my questions about mesothelioma, my questions about lung cancer; correct?
A Correct; yeah.
Q Okay.
Another hypothesis that one could have is that exposure to Libby asbestos is more likely to cause

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pleural disease than is exposure to chrysotile asbestos.
A Correct.
Q And neither you nor Dr. Whitehouse, nor anybody else, has done the analytic epidemiological work to prove the validity of that hypothesis; correct?
A Correct.
Q Another hypothesis that one could have -- first of all, would you agree with me that if you're going to talk about risk of death from a disease or severity of a disease, it's important to distinguish between different types of diseases?
A Yeah, given the state of the art at the time that you're making the distinction.
Q Okay. Let's just talk about smoking, for example.
A Uh-huh.
Q Smoking is associated with and probably causes a variety of different diseases; correct?
A Yes.
Q One of the things that smoking is well established that it causes lung cancer; correct?
A Yes.
Q Another thing that smoking causes is emphysema; correct?
A Yes.

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Q Another thing that smoking causes is chronic obstructive pulmonary disease; correct?
A Yes.
Q Okay. And so if you're going to make epidemiological assertions about whether smoking is more likely to lead to death by a particular disease, would you agree with me that it's important to define and describe and differentiate between the different diseases that you might be talking about; correct?
A Yes.
Q So, for example, the risk of dying from lung cancer is different than the risk of dying from emphysema; correct?
A Correct.
Q And the risk of dying from chronic -- COPD. Can we just say COPD to mean chronic obstructive pulmonary disease?
A Sure.
Q Is different than the risk of dying from either emphysema or lung cancer; correct?
A Correct.
Q So it's important to distinguish between the diseases that you're talking about if you're trying to test or prove hypothesis about probability of death or severity of disease. Would you agree with that?

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A Yes.
Q Okay.
Would you agree with me that asbestosis, at least as defined by the American Thoracic Society, is a different disease than is pleural disease?
A I don't know. I don't know if I would agree with that, actually.
MR. FINCH: Okay; why don't we get the 2004 ATS statement and go through it.
Can we mark this as the next exhibit? I think it's already been marked as Exhibit 19.
(Deposition Exhibit No. 19 marked for identification.)
Q (By Mr. Finch) Before we turn to the 2004 ATS statement, you had mentioned very early today something called a Frye hearing?
A Yes.
Q My understanding is -- of a Frye hearing is a hearing designed to test whether or not an expert's opinion about a subject matter is supported by sound scientific principles; is that correct?
A Yeah. My understanding is it's an evaluation of the scientific issues in a legal matter. I think it's the same thing.
Q And so, for example, if someone is going to

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testify to -- would you agree with me that the hypothesis that exposure to Libby asbestos is more likely to cause mesothelioma than exposure to chrysotile asbestos is a -- is a proposition that, in order to evaluate it, you have to apply the scientific principles of epidemiology? At least you should.
A It would be useful to, yeah.
Q Okay. And so if someone were to testify that Libby -- exposure to Libby asbestos is more likely to cause mesothelioma than exposure to some other type of asbestos, and they hadn't done the analytical epidemiological work to prove that, it would be your view, as an expert epidemiologist, that that was not a supportable statement; correct?
A Yeah.
Q Okay.
Now, I put before you the 2004 ATS statement.
A Yes.
Q Do you see that it says -- first of all, the title of it is Diagnosis and Initial Management of Nonmalignant Diseases Related to Asbestos.
A Yes.
Q And "Diseases" is plural. It's more than one disease; correct?
A Yes.

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Q Okay. And the -- on page 697, the ATS talks about different nonmalignant disease outcomes. Do you see that?
A Yes.
Q Okay. And would you agree with me that asbestosis is defined as interstitial pneumonitis and fibrosis caused by inhalation of asbestos fibers.
A That's what it says there; right.
Q Okay. And that's treated as one distinct diagnostic entity by the American Thoracic Society; correct?
A I'm not sure. Because on page -- the first page they say "Nonmalignant asbestos related disease refers to the following conditions: asbestosis, pleural thickening, or asbestos-related pleural fibrosis, (plaques or diffuse fibrosis), 'benign' (nonmalignant) pleural effusion, and airflow obstruction."
Q And you don't understand that as describing different diseases?
A Well, it's singular. It says "This statement presents guidance for the diagnosis of nonmalignant asbestos-related disease. Nonmalignant asbestos-related disease," singular, "refers to the following conditions:" so --
Q You have not spent your career studying

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asbestos-related disease; correct?
A Correct.
Q And you are not going to be able to testify as an expert on asbestos medicine that asbestosis is the same disease as pleural disease; correct?
A Not unless I -- not unless I quote this thing here which seems to be saying it's the same thing; a series of conditions that are --
Q You're just reading the language. You haven't spent your career treating people with asbestos-related disease; correct?
A No, no.
Q You don't know the difference -- you haven't reviewed -- you certainly haven't -- would you agree with me there are literally thousands of articles in the medical literature about asbestos-related disease?
A Yes.
Q And you certainly haven't gone out and done a review of all the literature out there that exists about asbestos-related anomaly disease?
A Absolutely not.
Q Would you agree with me that there are different -- that mesothelioma, for example, and lung cancer are different cancers that are caused by asbestos?

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A Yes.
Q And do you have a view, based on a career in -- in -- do you have a view, based on anything other than just reading this document, as to whether or not asbestosis is a different disease than pleural plaques, for example?
A My view, from what I have read, and I am not an expert -- not an expert in this field. But from what I have read, pleural plaques are a type of asbestosis.
Q That's your view.
A Yeah.
Q What about diffuse pleural thickening? Is that a type of asbestosis?
A Of nonmalignant asbestos -- yeah, it says it right here. It's pleural thickening. It says it right here in this expert report.
Q So it's your view that diffuse pleural thickening is the same disease as asbestosis.
A I can agree with what's stated here, okay, that "Nonmalignant asbestos-related disease refers to the following conditions: asbestosis, pleural thickening, asbestos-related pleural fibrosis." That, to me, makes some sense. But I totally give to you I am not an expert in this field.
Q Okay; will you at least agree with me that on

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page 697 there is a definition of asbestosis that says "Asbestosis is the interstitial pneumonitis and fibrosis caused by inhalation of asbestosis fibers"?
A There is a definition that says that; yeah.
Q Then on page 702 there is a definition of nonmalignant pleural or abnormalities associated with asbestos.
A Okay.
Q Do you see that?
A Yep.
Q And it says "Pleural abnormalities associated with asbestos exposure are the result of collagen deposition resulting in subpleural thickening, which may subsequently calcify, and which in the visceral pleura may be associated with parenchymal fibrosis in adjacent subpleural alveoli."
A Uh-huh.
Q "Pleural thickening, as a marker of asbestos exposure, has continued to be a prominent feature of exposure to asbestos while other outcomes, such as asbestosis, have become less frequent due to declining exposure levels." Do you see that?
A Yep.
Q You would agree with me that at least for purposes of definition, the definition of asbestosis in

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the 2004 ATS statement, is different than the definition of pleural disease, what I just read to you.
MR. HEBERLING: Objection; misstatement of the document. It's not an answerable question. That isn't the definition of pleural disease.
THE WITNESS: Yeah, I can't really answer that. Could you rephase that?
Q (By Mr. Finch) Sure. Would you agree with me that there is a definition of asbestosis in the document that does not include pleural thickening or pleural plaque?
A There is such a definition, to my way of thinking, in the first item that you pointed out on --
Q On 697?
A Yeah.
Q That defines asbestosis as a particular diagnostic entity; correct?
A Yeah, I guess.
Q And that is talking about interstitial fibrosis in the parenchyma of the lung; correct?
A Right.
Q You understand that the parenchyma of the lung is the inside of the lung and the pleura is the outside of the lung.
A Right.

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Q And so that the definition of asbestosis doesn't include disease that occurs on the outside of the lung.
A Well, I think what I'm beginning to understand is that this document has internal contradictions in it. Because what it said on the second paragraph does not appear to agree with what is said on page 697. I could be misunderstanding it, but it does not seem to be consistent.
Q If you were to assume that pleural disease is a different -- that asbestos-related pleural disease is a different disease than asbestosis -- I want you to assume that those are two different diagnostic entities for the purpose of my questions.
A Yes.
Q Would you agree with me that if you were going to test the hypothesis of whether or not pleural disease caused by exposure to Libby asbestos is more severe than pleural disease caused by exposure to other types of asbestos, it's important to define and distinguish between pleural disease as compared to asbestosis?
A If that distinction is -- is the one that the American Thoracic Society is operating with. Though from this document, it's very hard to tell that, though I have not read the entire thing.

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Q All right.
One hypothesis that one could test is whether or not pleural disease caused by exposure to Libby asbestos is more likely to lead to death than pleural disease caused by exposure to other types of asbestos; correct?
A Correct.
Q And neither you nor Dr. Whitehouse nor anybody else have done the analytical epidemiological work to prove whether or not that hypothesis is true; correct?
A Correct.
Q So you couldn't say, for example, that someone who has pleural disease caused by exposure to Libby asbestos is more likely to die than someone who has pleural disease caused by some other asbestos; right? You couldn't say that, as a matter of epidemiological science.
A I could not.
Q And Dr. Whitehouse's work doesn't support that hypothesis either. You wouldn't agree that, as a matter of analytical epidemiology --
A Yeah.
Q -- that -- that his work would support that hypothesis.
A Yes, I agree.

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Q Okay.
And in his CARD Mortality Study, did you understand that of the 76 nonmalignant deaths, Dr. Whitehouse included people who both had pleural disease as well as people who had asbestosis?
A My understanding was that he was looking at asbestosis-related disease, however that is defined.
Q However he defined it, it included both parenchymal disease and pleural disease in his 76 deaths.
A I believe he did.
Q Okay.
Would you agree with me that in order to draw a conclusion from a smaller population and apply it to a larger population, the smaller population has to be representative of the larger population?
A I'm not sure if I understand your question.
Q Let me strike that question and re-ask it.
One hypothesis that Dr. Whitehouse has raised is that pleural disease caused by exposure to Libby asbestos is different, in terms of severity of lung function loss, than pleural disease caused by other forms of asbestos. That's a hypothesis that he has; correct?
A Correct.

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Q And neither he nor you have done the analytical epidemiological work to determine whether that hypothesis is true.
A Correct.
Q The -- you certainly haven't -- you certainly are not prepared to give an opinion, to a reasonable degree of certainty as a epidemiology -- as an epidemiologist, that the pleural disease caused by exposure to Libby asbestos is more severe, in terms of loss of lung function, than pleural disease caused by other forms of asbestos outside of Libby.
A Correct.
Q And in your view as an expert epidemiologist, none of the work done by Dr. Whitehouse or Dr. Frank, or any other expert in this case, would allow you to prove that hypothesis.
A Not that I'm aware of.
Q In your expert report, I believe it's Exhibit 2 to your deposition, do you have that, Dr. Molgaard?
A Not yet.
Q If you go to page nine of that report --
A Uh-huh.
Q -- you're responding to one of -- is it Mr. or Dr. -- Dr. Moolgavkar's comments on Whitehouse's 2004 paper about progressive loss of lung function. Do you

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see that?
A Yeah.
MR. HEBERLING: What page is that?
MR. FINCH: Page nine of Molgaard's report.
Q (By Mr. Finch) You write "First, the study is on 123 subjects who are representative of the asbestos disease population." Do you see that?
A Yeah.
Q You didn't make any independent assessment of whether the 123 patients in the progression study were representative of the -- all the people in Libby, Montana who have asbestos-related disease, did you?
A No.
Q So if, for example, the 123 subjects in the 2004 paper were, on average, exposed to far more asbestos than the average level of exposure for all 1,800 people in the Libby patient population, then they wouldn't be representative -- the 123 wouldn't be representative of the disease population of the whole; correct?
A Yes, if you're saying the selection bias code still exists.
Q Okay. You just used a term "selection bias."
A Yeah.
Q Explain to me what is selection bias.

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A That is the people who get into, say in this situation, perhaps these people who come to the doctor's attention and get into his clinical series, select themselves somehow or other. That is, there is -- they show up because they feel worse. They show up because they're closer to the doctor's office. They show up because they've known the doctor who's treated other people who have had the disease. Anything that produces a pressure or bias on people who get to a place, enter a study or enter an analysis, for reasons that you would not normally expect. And bias is defined as any systematic deviation from the truth. So if it's a systematic selection pressure that gets people to his clinical series, you know, then it could be -- it could be that there is such a bias.

Q Okay; in addition to a selection bias, there can also be things that make the 123 people unrepresentative of the bigger patient population; correct?

A And the selection bias is what would drive that lack, if it was there. The selection bias would be one of the things that could drive a lack of generalizability.

Q Okay. But I mean, as I understood when you were saying "selection bias," the example you used was

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people felt worse or they were closer to Whitehouse's office. That's one example of a selection bias; correct?

A Sure.

Q Another example of selection bias could be if, for example, the 123 patients in the study were far heavier smokers at some point in their life than the 1,800 patients that you might want to extrapolate it to, then the 123 wouldn't necessarily be representative at all to what you might expect in the 1,800; correct?

A It could be.

Q And if, for example, the 123 patients in the progression study were, on average, exposed to -- would you agree with me that asbestos diseases are dose responsive?

A By and large, they appear to be.

Q Meaning that the more asbestos you're exposed to, the more likely you are to contract an asbestos-related disease; correct?

A Correct.

Q And that's true for both nonmalignant diseases and asbestos-related cancers.

A I believe that is true.

Q Although, for mesothelioma, there is -- they haven't really defined a threshold below which there is

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no -- which there is no safe exposure.

A Right; there are some exceptions, yes.

Q So the math gets squirrelly when you start putting infinity -- one over zero you get to infinity.

A It does, yeah.

Q So leaving mesothelioma aside, the other -- the other asbestos-related diseases are dose response in that the more asbestos you're exposed to, the more likely you are to get an asbestos-related disease; correct?

A It appears to be that way.

Q And would you also agree with the proposition that, generally speaking, the more heavily you are exposed, the more severe your nonmalignant disease tend to be. People look at, for example, the insulator as compared to lower exposed coworkers.

A I guess I would say to that that there are -- the whole arena of exposure in environmental health has been really worked a lot in the last few years. It appears that, you know, a lot of what happens with different kinds of diseases is maybe not the size of the dose, but maybe it's when you are dosed, when in your life span are you dosed. Are you dosed, you know, as an adolescent?

Q You mean, earlier exposures might be more

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dangerous than later exposures.

A Yeah, exactly. So it may not be just the cumulative exposure, it may be when. A fair amount of study coming out of the National Study of Environmental Health is showing fairly persuasively that a lot of chronic diseases appear to be related to in utero exposures. So it's like, you know, are you exposed in utero, and that could be something that drives the disease pattern of diabetes in your thirties.

Q Um --

A So that's a long answer. Because really what I'm just trying to say is it's more than just dose. Dose itself is very important. But it could be when you are dosed.

Q Okay. But if, for example, the 123 patients in the progression study, if the vast majority of them were miners who were exposed to a lot more asbestos on average than the rest of the 1,800 patient population, it may well be that the progression of lung function decline you saw in the 123 would not be predictive of what you would see in the bigger population.

MR. HEBERLING: Objection; outside his area of expertise.

THE WITNESS: I didn't really understand the question anyway, so....

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Q (By Mr. Finch) Okay. In order for the -- in order for you to make any extrapolation from the 123 to the bigger patient population, you would have to -- the 123 would have to be representative of the bigger patient population on every variable that matters for lung function decline; correct?
A Ideally, yes.
Q Okay. And you haven't done anything to assess whether there are variables about those 123 subjects that are different as it relates to the things that might cause lung function decline. You haven't done that.
A No, I have not.
Q Okay.
Last defines the power of a study as the ability of a study to demonstrate an association, if one exists.
A Right.
Q Could you put that into layman's terms? What does that mean?
A It's the amount of surety you have that you have actually found something and that there really is something going on in your study and it's not just something could happen by chance; okay? It's -- it has to do with type one, type two errors when you're doing

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inferential testing. And power is one minus beta or one minus type two error. And it's rather complicated and boring. But basically what it amounts to is that there is -- it gives you a probability that what you are finding is really there.
Most studies of analytic type will look at -- will want a power of one minus beta probability of 80 to 90 percent. And so you then generate a sample that gives you that much power.
Q I've sort of always thought it was power as a statistical concept in the sense that if you have an observation of ten events, that's a much less powerful study than if you have an observation of a thousand similar events; correct?
A Yeah.
Q So, for example, if you wanted to -- if you wanted to make conclusions about the probability of flipping a coin and how often it's going to be heads versus how often it's going to be tails, if you did a study with only ten flips, that's far less powerful than a study that has a thousand flips; correct?
A That's a good way -- yeah, that's fine.
Q So, for example, if you flip a coin ten times, you might come up seven heads and three tails. Whereas if you did it a thousand times, the odds are you're not

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going to come up 70 percent heads and 30 percent tails; correct?
A Yeah.
Q And so with a study that has much less statistical power, you might draw invalid conclusions just because the study doesn't have enough power to weed out random events; correct?
A Yeah.
Q Okay.
Dr. Whitehouse's progression study was looking at a subset of his total patient population. His total patient population is 1,800 people; right?
A Right.
Q And of those 1,800, we've got the medical records of about a thousand of them that were produced; correct?
MR. HEBERLING: Objection; misstatement of the record.
MR. FINCH: Have you produced the medical records for all 1,800 people?
MR. HEBERLING: You're talking about the Whitehouse progression study.
MR. FINCH: Yes.
MR. HEBERLING: The client number at that time was 491.

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MR. FINCH: I understand that.
Q (By Mr. Finch) But of the -- there are 1,800 people who live in and around Libby who have been diagnosed with asbestos-related disease, correct, Dr. Molgaard? That's your understanding?
A Yeah.
Q The 123 patients are -- obviously, it's a much smaller number of people than either 900 or 1,800; correct?
A Right.
Q So would you agree with me that if you -- and would you agree with me that what Whitehouse did in the 2004 paper was what some -- he did an analysis of change in lung function over time between point A and point B?
A Right.
Q And the time period was about three years, on average?
A Right.
Q Okay. Would you agree with me that, as a matter of statistics, a study that analyzes lung function decline in 123 people over a three-month (sic) period of time is much less powerful than a study that would examine lung function decline in 900 people with asbestos-related disease over a five-to-seven-year period of time?

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A I would not agree with you, because the issue is where does the concept of statistical power apply. And by and large, it does not apply to descriptive studies. It applies to analytical studies or clinical trials.
Q Okay; I'm glad you mentioned that. A descriptive -- you could not use the results of a descriptive study to say -- to make predictions about the outcomes of a disease in a larger population; correct?
A Could not use it to do what?
Q To make a prediction about the disease progression in a bigger population.
A I would not think so, because I think that that's -- what you're really doing is you're using -- you are explaining what's going on within this case series.
Q Right; you're explaining -- you're saying you've got these 123 people, and 76 percent of them showed a lung function decline over a three-year period of time; correct?
A Right.
Q You could not, as a matter of analytic epidemiology, say that because I observed that in these 123 people, therefore, there is a 76-percent chance that

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anybody who has an asbestos-related disease in Libby will also suffer a lung function decline.
A That would be a hypothesis to be tested, I believe.
Q And nobody's done the work in this case to prove the hypothesis that every -- or anybody with asbestos disease in Libby has a 76-percent chance to have a loss of lung function.
A Not to my knowledge.
Q Okay.
And nobody has done the epidemiological work to prove the hypothesis that anybody who has an asbestos-related disease in Libby has a 59-percent chance of dying; correct?
A Done the work in terms of analytic epidemiology, no, not to my knowledge.
MR. FINCH: Okay; this would be a good time to take a little break. I'm getting close to done.
VIDEO TECHNICIAN: Off the record, then, it's 3:06.
(Deposition in recess from 3:06 p.m. to 3:10 p.m.)
VIDEO TECHNICIAN: We're back on the record. The time is 3:10.
Q (By Mr. Finch) Dr. Molgaard, I didn't see

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anywhere in your expert witness report any analysis or discussion or criticism of the W.R. Grace bankruptcy trust distribution procedures.
A I know almost nothing about that.
Q Okay. You said you reviewed Dr. Whitehouse's report and you commented on certain aspects of his report --
A Uh-huh.
Q -- but am I correct that you have not been asked to analyze or review or have any opinions about the medical or exposure criteria in the Grace TDP?
A That's correct.
Q So you're not vouching for Dr. Whitehouse's views -- you're not vouching for or critiquing the medical and exposure criteria in the TDP in any way.
A That's correct.
Q Okay.
And then Mr. Whitehouse -- excuse me. I've been traveling a lot lately. I just slandered Dr. Whitehouse and Mr. Heberling as to which I'm both sorry.
But Mr. Heberling --
MR. HEBERLING: I don't -- well, anyway, you said "Mr. Whitehouse." You didn't say anything about Dr. Heberling which would be slander.

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MR. FINCH: I was thinking about you and I -- Whitehouse is a doctor, obviously. Mr. Heberling is a very fine lawyer.
Q (By Mr. Finch) Mr. Heberling sent me an e-mail, along with other people, on Saturday that talks about paragraphs 44, 45, and 48 of Dr. Whitehouse's May 2009 report. And I think that report was marked as one of --
A That's 5, Exhibit 5.
Q -- Exhibit 5. And this is where he's describing the mesothelioma cases in Libby as compared to the Libby's average population versus the mesothelioma cases around the Manville plant.
A Uh-huh.
Q Again, this analysis in paragraphs 44 and 45 is a matter of descriptive epidemiology; correct?
A Correct.
Q So you cannot, from that, make any causal connection as to whether exposure to amphiboles in Libby is more or more -- more or less likely the cause of mesothelioma than exposure to asbestos around Manville, New Jersey; correct?
A Um --
Q Let me withdraw that question and rephrase it.
You don't know what kind of asbestos

PP

exposures -- the paragraphs 44 and 45 do not allow one to test the hypothesis as to whether exposure to Libby asbestos is more or less likely to cause mesothelioma than exposure to other types of asbestos; correct?

A Correct.

Q And similarly, paragraph 48, this is describing the ATSDR study and mortality in Libby, Montana?

A Yes.

Q Do you see that?

A Uh-huh.

Q This paragraph doesn't attempt to make any comparison between the ability of amphibole asbestos from Libby to cause asbestosis as compared to other types of asbestos fibers that cause asbestosis.

A Correct.

MR. FINCH: I believe I'm done; pass the witness.

MR. HEBERLING: All yours, Dale.

MR. COCKRELL: No questions.

MR. FINCH: Does anybody on the telephone have any questions?

MR. HEBERLING: Is anyone on the telephone? I think we woke somebody up. I heard something.

THE WITNESS: I heard a choking noise.

MR. HEBERLING: So I will reserve my

questions to the time of trial.

MR. FINCH: Okay.

You have the right to read and sign. I'm sure you know all about that. So this deposition is concluded.

VIDEO TECHNICIAN: This ends the deposition. The time is 3:15.

(Deposition concluded at 3:15 p.m.; witness excused, signature reserved.)

CERTIFICATE OF WITNESS

PAGE LINE CORRECTION

I, CRAIG MOLGAARD, Ph.D., have read the foregoing transcript of my testimony and believe the same to be true, except for the corrections noted above.

DATED this day of , 2009.

Deponent

SUBSCRIBED AND SWORN to before me this day of , 2009.

Notary Public for the State of Montana
Residing at , Montana
My Commission expires:

REPORTER'S CERTIFICATE

I, BAMBI A. GOODMAN, CSR, RPR, CRR and Notary Public in and for the State of Montana, residing in Whitefish, Montana, do hereby certify:

That I did report the foregoing videotaped deposition after having duly sworn CRAIG MOLGAARD, Ph.D. to the truth; that the deposition was taken at the time and place stated on the caption hereto; that the testimony of the witness was taken in shorthand by me and subsequently reduced to writing under my direction; that the foregoing is a true and correct transcript of the testimony given by the witness;

I further certify that I am not counsel, attorney nor relative or employee of any party, nor otherwise interested in the event of this suit.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my seal of office this 29th day of June, 2009.

BAMBI A. GOODMAN, CSR, RPR, CRR and
Notary Public, State of Montana
Residing at Whitefish, Montana
My Commission expires 3/21/10